



North Carolina Air Quality Update

November 8, 2018

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Department of Environmental Quality



Presentation Overview

- **Statewide Air Quality Trends**
- **Hurricane Florence / Tropical Storm Michael Impacts**
- **Updates on GenX / Emerging Compounds**
- **Periodic Review of Air Quality Rules**
- **Volkswagen Environmental Mitigation Trust**

Statewide Air Quality Trends

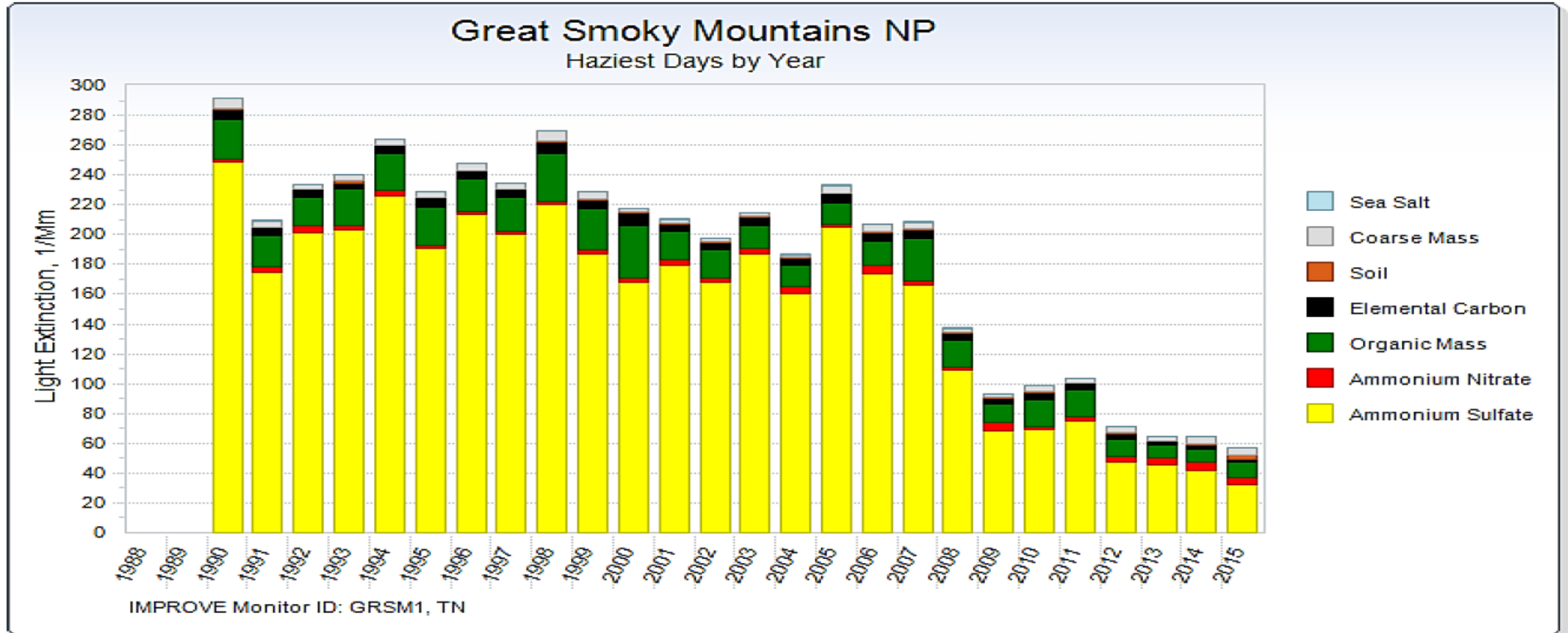
Air Quality in North Carolina

- **Overall air quality in North Carolina continues to improve.**
- **Emission reduction programs are working!!!**
 - **Federal, State and Local**
- **All areas of the state are now in compliance with and designated as attainment or maintenance for all NAAQS.**



Success! – What does it look like?

Trends in Light Extinction/Haziness on the Annual 20% Haziest Days at Great Smoky Mountains National Park



Improvement in Haze on 20% Worst Days at Look Rock



Then...

1998

9 mile Visual Range
33 deciviews



Now...

2016

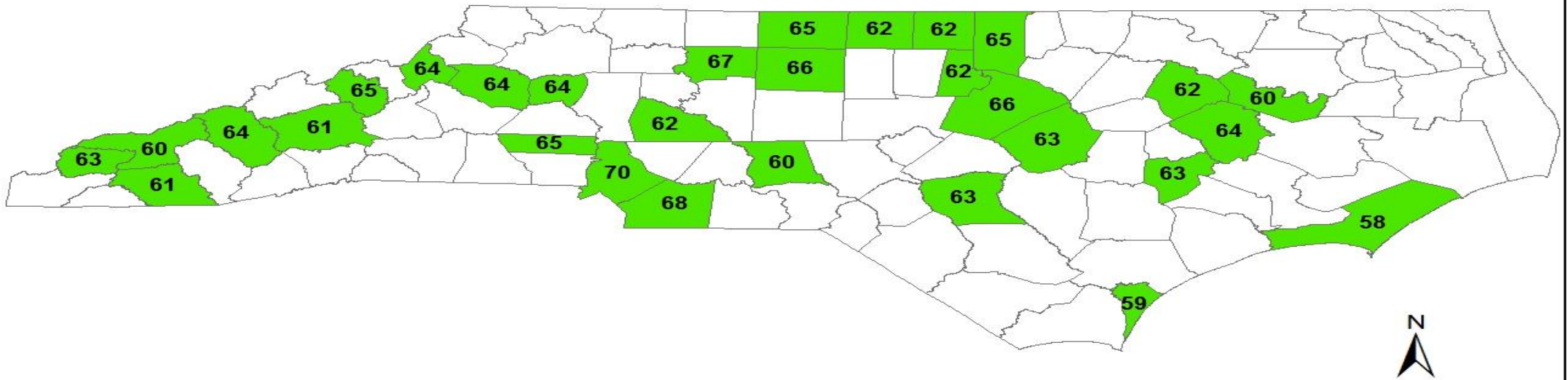
31 mile Visual Range
21 deciviews







Success! – What does it look like?

North Carolina Ozone Design Values
2016-2018



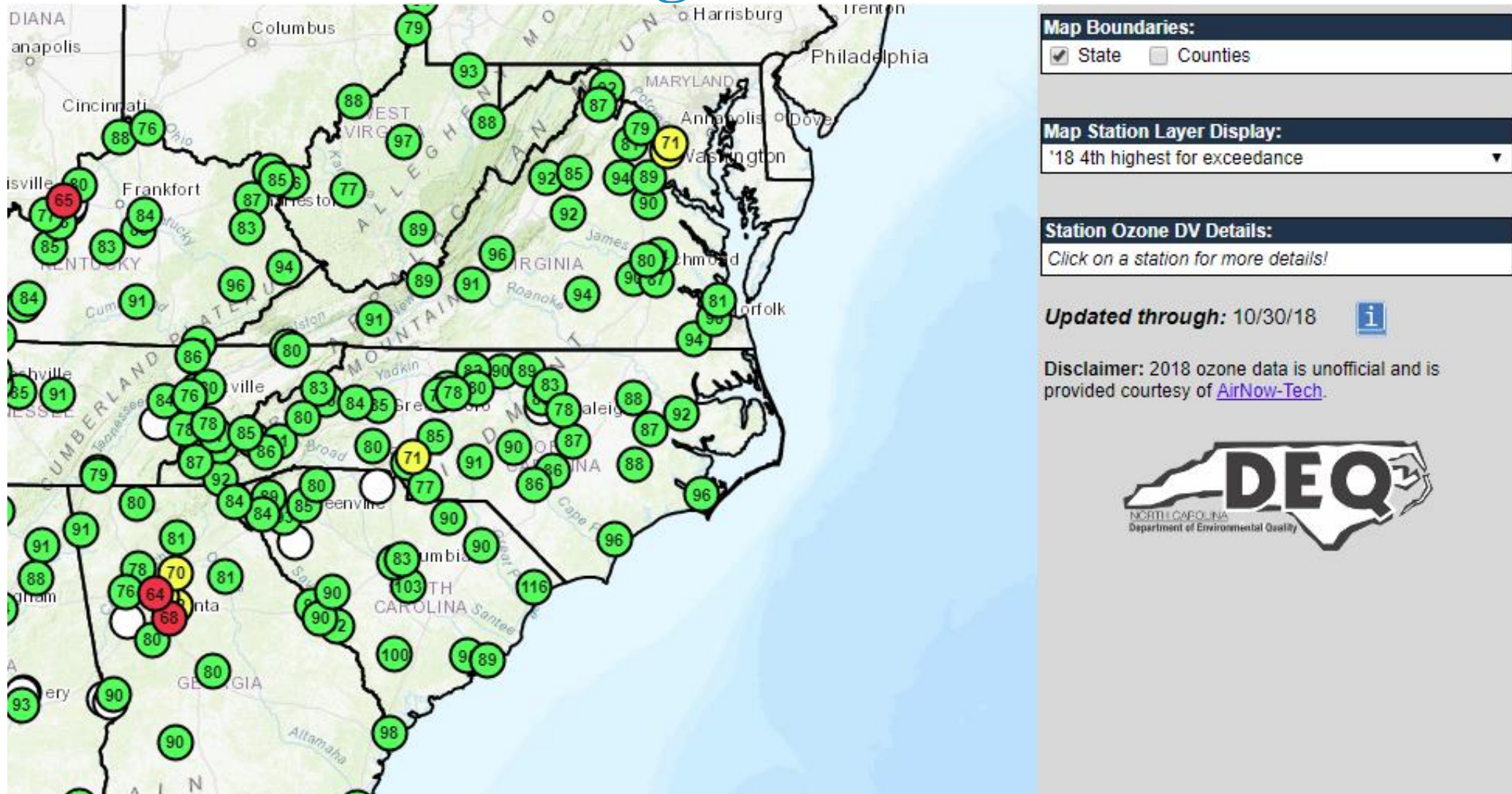
Final Ozone Design Values

-  No Monitor in County
-  Monitor in County; Attaining the 70 ppb 2015 8-hour Ozone NAAQS

Data is preliminary, through October 29, 2018.

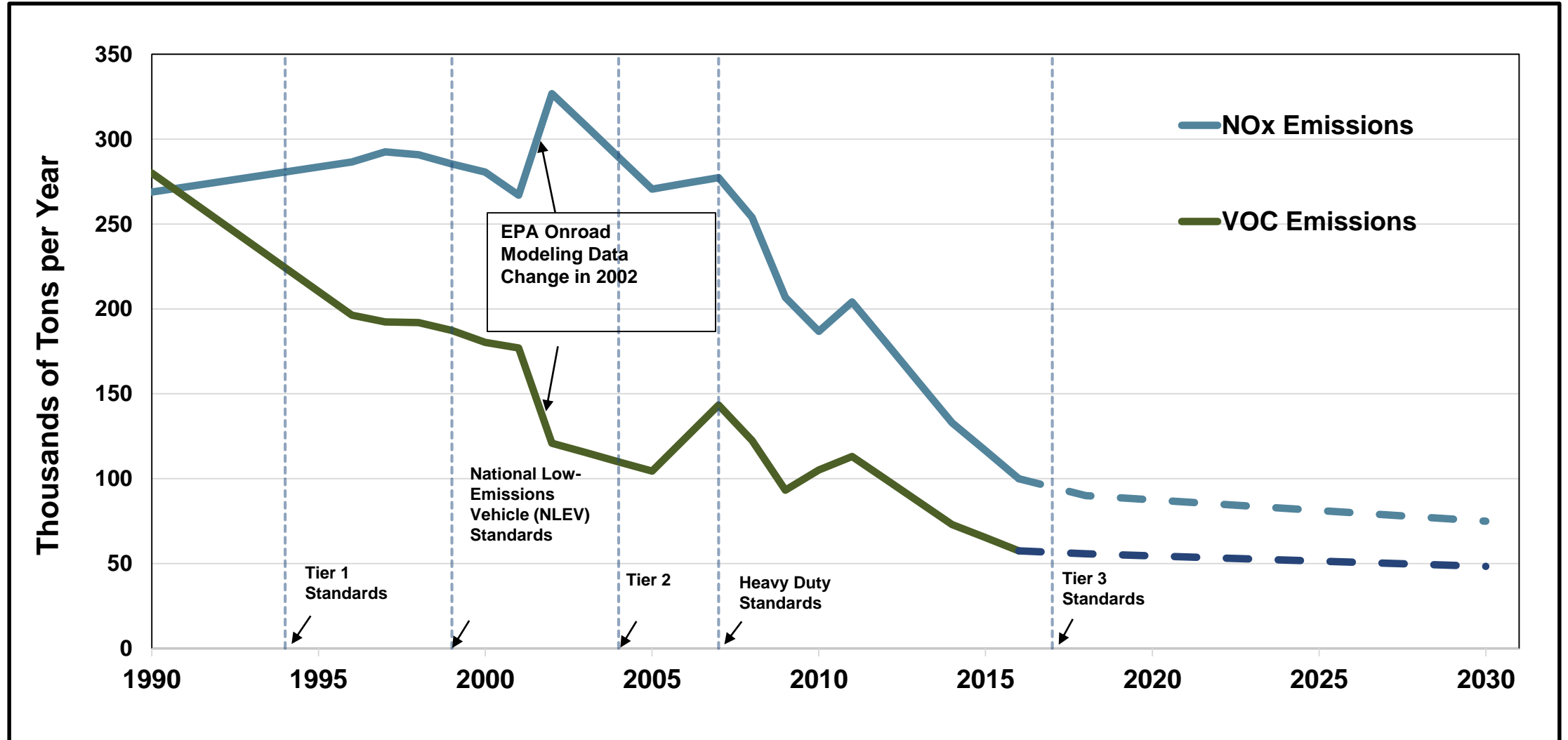
Author: ET
Date: 29 October 2018

New Ozone Design Value Predictor Tool

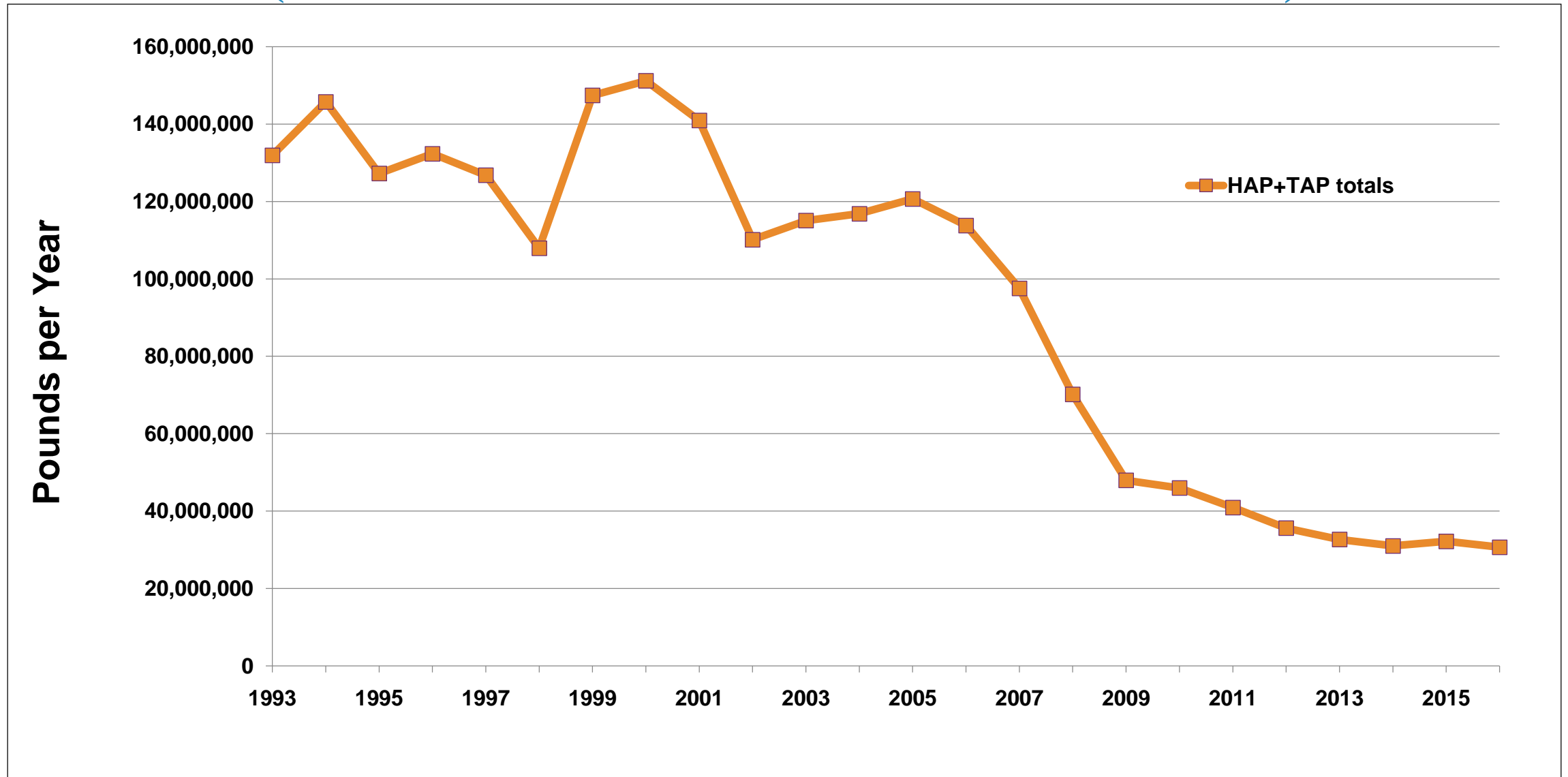


http://www2.ncair.org/airaware/forecast/DesignValues_SESARM/predictor.php

NC On-road NO_x & VOC Emissions, 1990-2016/2030



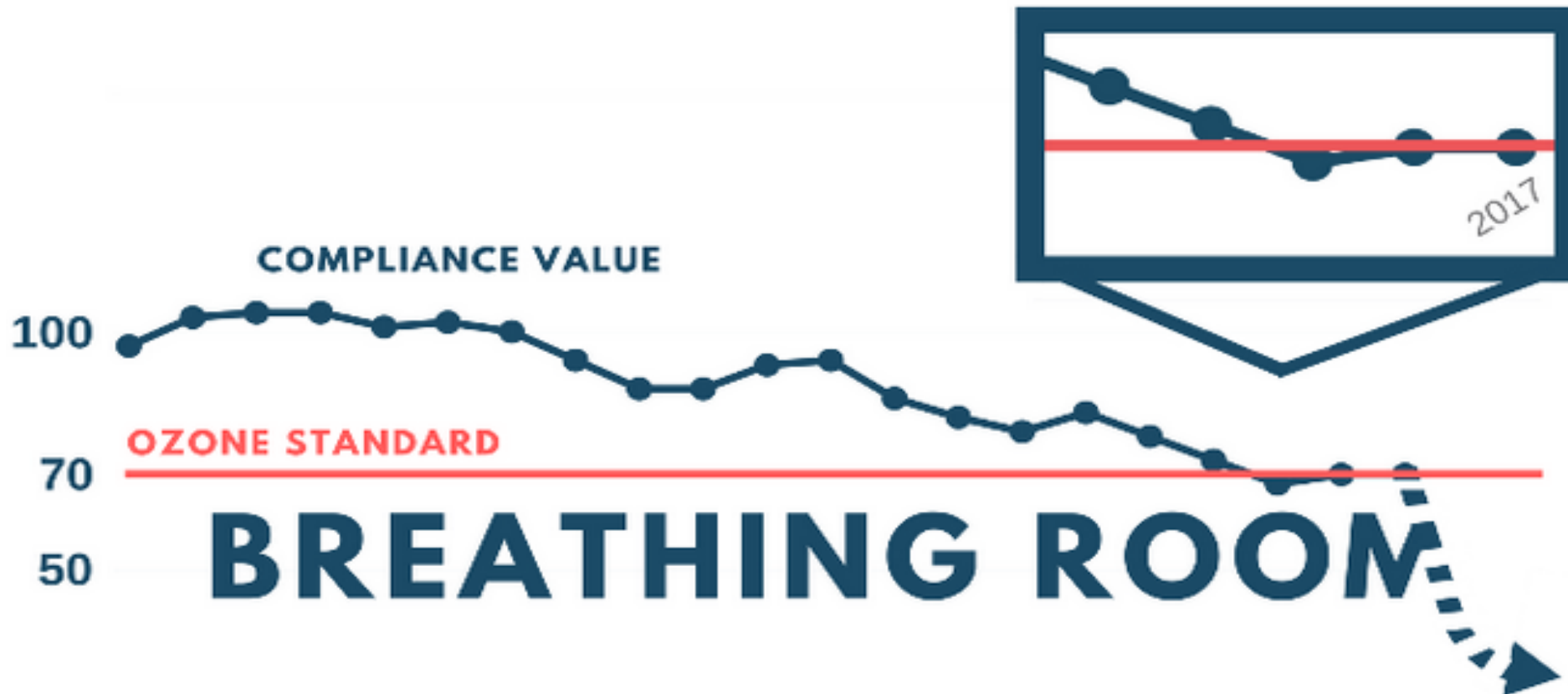
Annual Statewide Emissions Trends, 1993 – 2016 (Hazardous and Toxic Air Pollutants)



Ozone Advance – Charlotte Area

Breathing Room

Improving Air Quality Beyond the Ozone Health Standard



Hurricane Florence / Tropical Storm Michael Impacts on NC DAQ

NC Hurricane Readiness

Protecting air quality monitoring assets:

- 11 air monitoring sites shut down and equipment removed.
- 20 air monitoring sites shut down and equipment secured in place.
- 5 rainwater sampling sites near Chemours were shut down and removed from the field.



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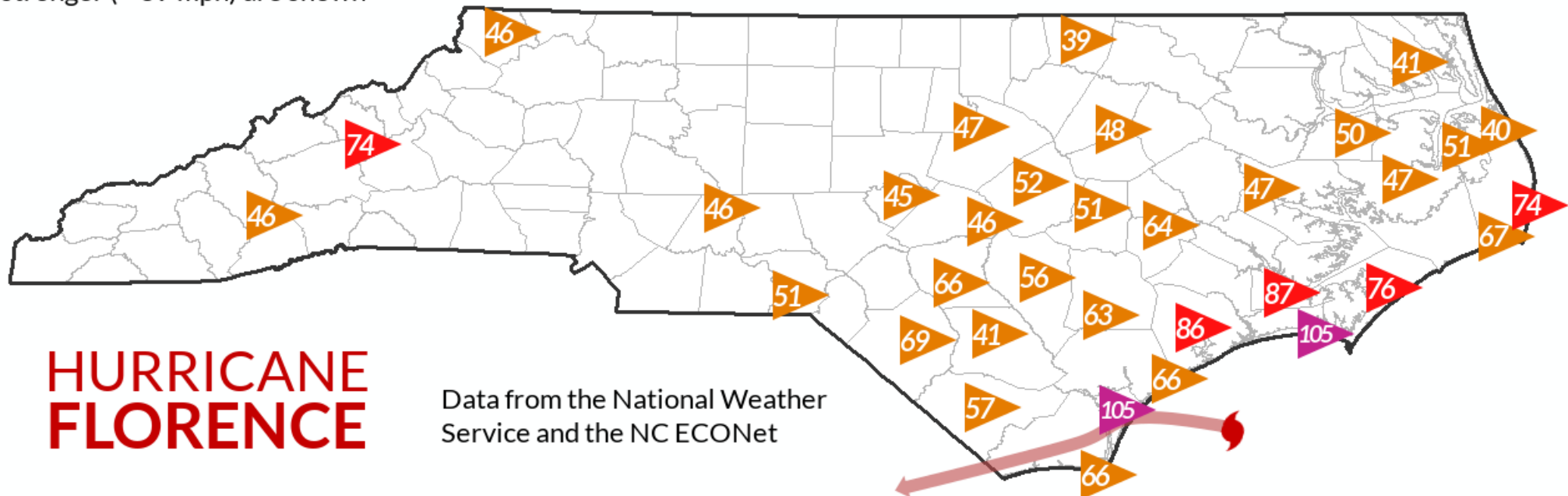
Hurricane Florence

Max. Wind Gusts (mph)

Sep. 13-17, 2018



Tropical storm-force gusts or stronger (≥ 39 mph) are shown



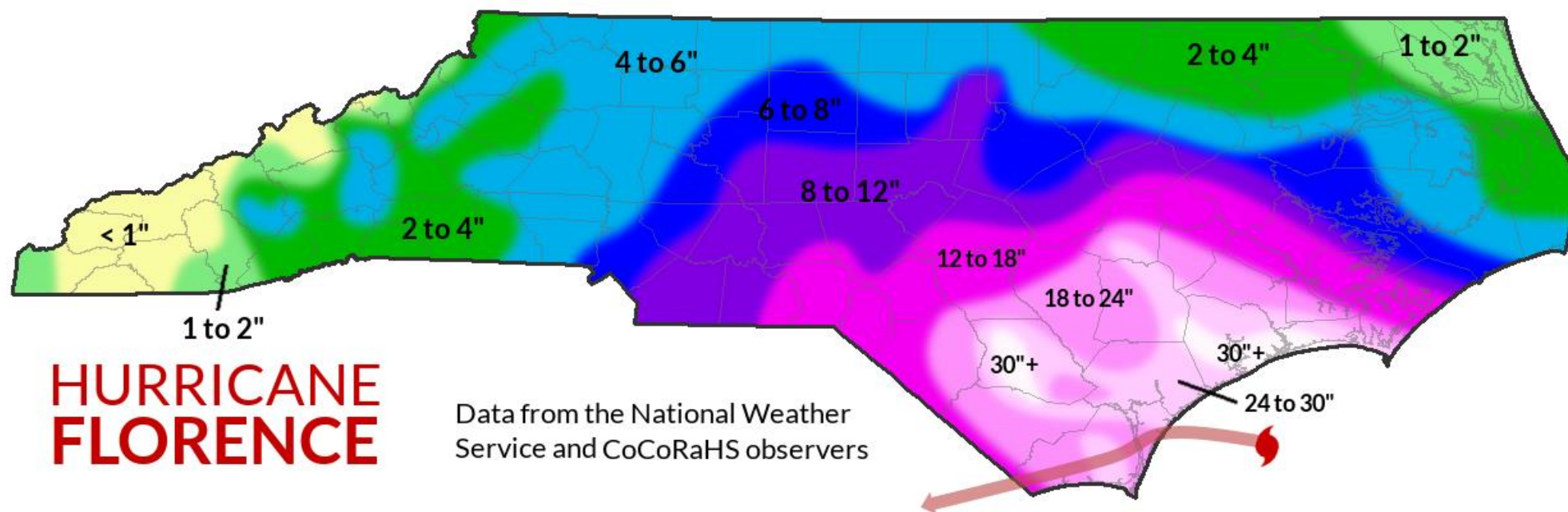
- Castle Hayne ECONet station reported 24 consecutive hours of tropical storm-force or greater (39mph +) wind gusts



Hurricane Florence

Total Precipitation (in.)

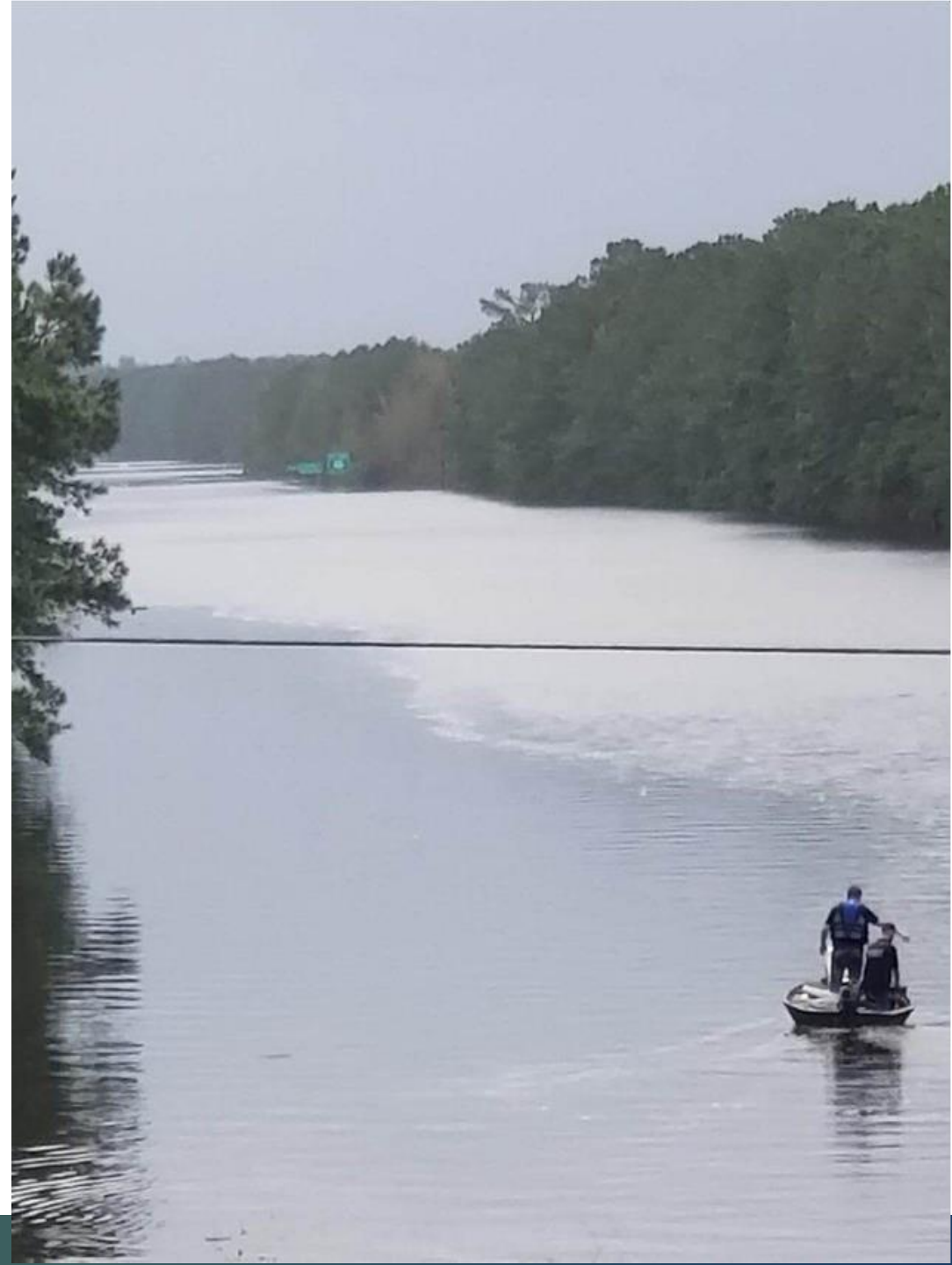
Sep. 13-17, 2018



- Castle Hayne ECONet station reported 48 consecutive hours of measurable rainfall







After the Storm



- Assess damage to monitoring sites... if we can get there.
- Get the monitors back out in the field.

❖ Bayview, NC – along north side of Pamlico River



Other State Hurricane Actions (Potential Fuel Supply Issues)

In coordination with other state, federal, and private sector partners, DAQ requested various fuel waivers and no action assurance letters from EPA. These actions are common in situations like this and are aimed at minimizing or preventing fuel supply issues before, during, and after a storm.

- 9/11/18 – EPA granted our request to waive the federal Reid Vapor Pressure (RVP) requirements for summer months. Expired on 9/15/18.
- 9/11/18 – EPA issued a no action assurance letter indicating they would exercise their discretion not to pursue enforcement of federal and state tank tightness regulations. Expired on 9/30/18.
- 9/17/18 – EPA granted our request to allow non-road diesel to be used for on-road purposes. Complementary tax penalty relief was requested and provided by the IRS for any person that sold or used the non-road diesel for highway use... through 9/28/18.

After The Storm

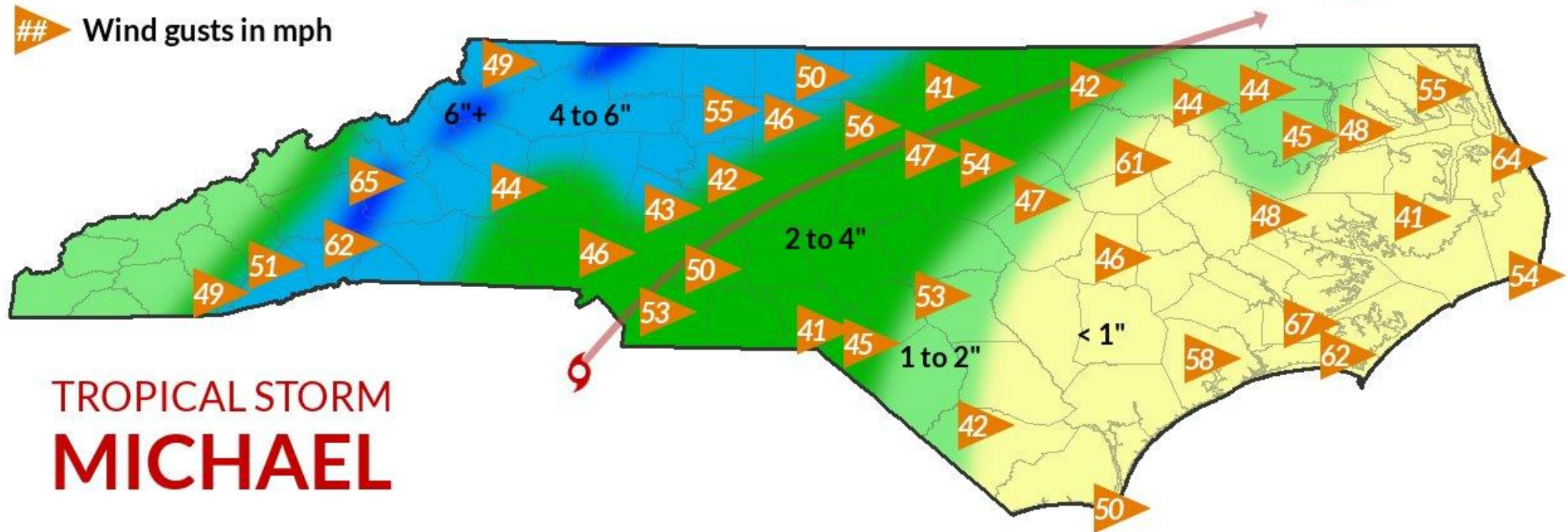
- **Wilmington Regional Office was closed for nearly 3 weeks.**
- **DAQ has approved 7 vegetative debris burning sites (so far).**
- **DAQ staff at the Emergency Operations Center for about 14 days.**
- **DAQ assisted colleagues in the Division of Waste Management by staffing the US Coast Guard Joint Information Center / Incident Command Post in Fayetteville to assist coordinating vessel/boat recovery and associated pollution mitigation. This 12-hour shift work continued through early October.**
- **Compliance Operating Plan – on a FFY calendar**
 - **October through September**

Tropical Storm Michael

Maximum Wind Gusts and Rainfall

Total Precipitation

October 10-11, 2018



- Many areas in Central North Carolina experienced higher wind gusts during Tropical Storm Michael than in Hurricane Florence.



Emerging Compounds / GenX Update

What Do We Mean by Emerging Compounds?

- No specific limit in state or federal environmental regulations.
- Sparse knowledge about how they behave in the environment.
- Little known about their effects on human health and environment.
- Significant challenge for regulatory agencies.
- How do we find compounds without knowing what they are?
- How do we prioritize unknowns for further analysis?
- How do we identify/quantify without analytical standards?
- How do we minimize impacts? Communicate hazards?

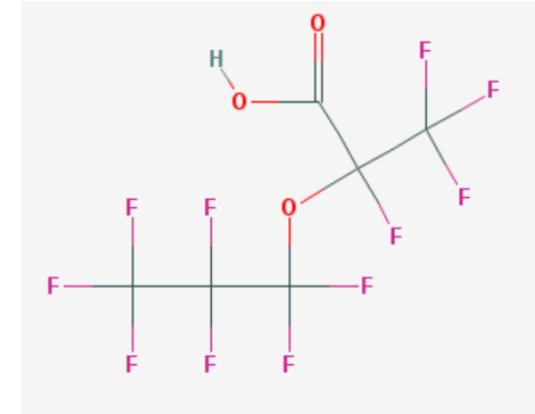


Emerging Compounds

GenX? What's that?

What is GenX?

- C3 Dimer Acid, $C_6HF_{11}O_3$
- GenX is a trade name for a man-made and unregulated chemical used in manufacturing nonstick coatings and for other purposes.
- Chemours' facility (formerly DuPont) near Fayetteville began producing GenX commercially in 2009 as a replacement for Perfluorooctanoic acid (PFOA).
- The same chemical is also produced as a byproduct during other manufacturing processes at Chemours and it may have been present in the environment for many years before being produced commercially as GenX.



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Emerging Compounds GenX... Is it bad for you?

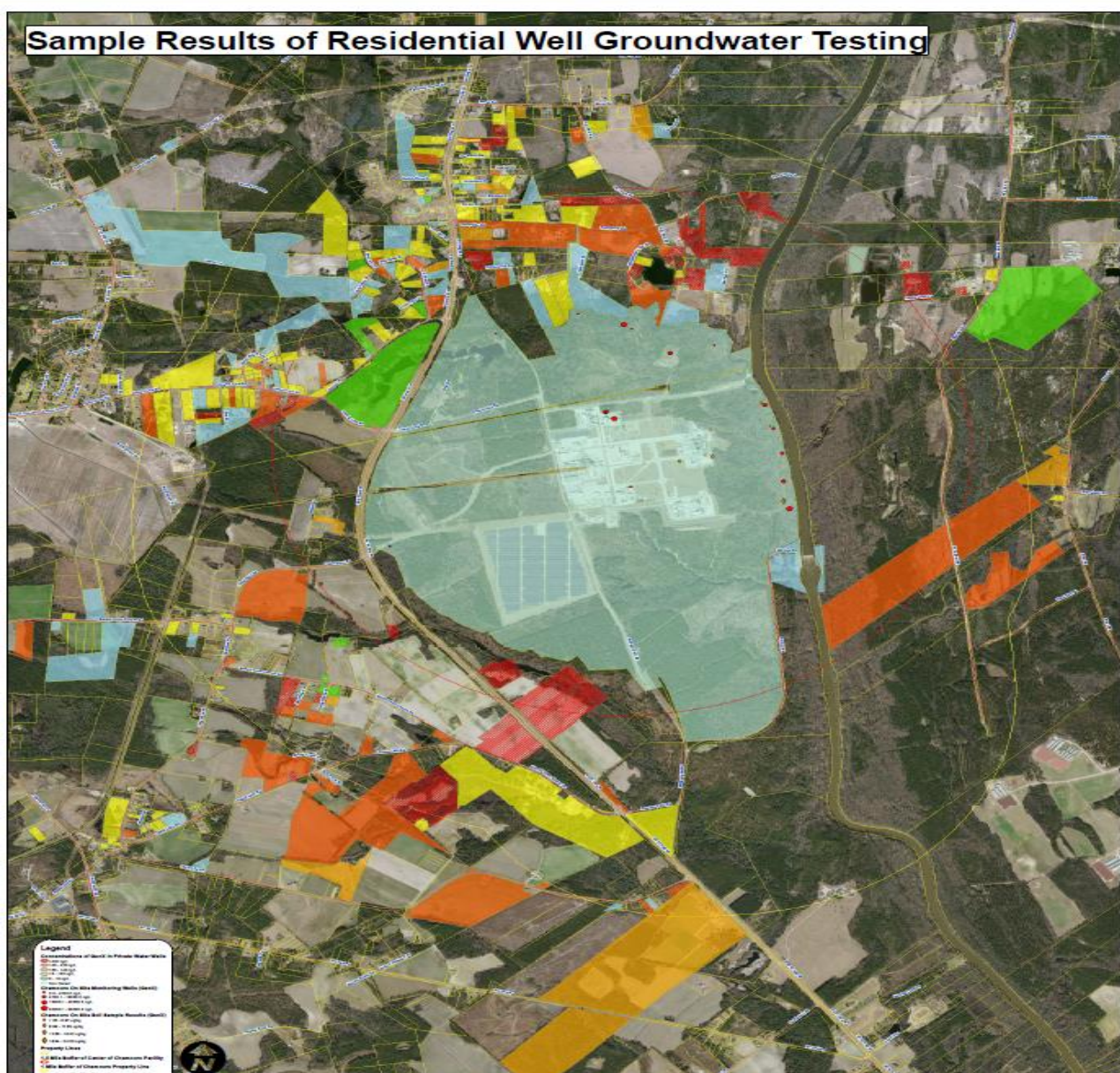
Unregulated compounds: What do you do?

- National regulatory standards (EPA)
 - State Standards (DEQ/Environmental Management Commission)
 - National health advisories or other health values (EPA, CDC)
 - Other governmental guidance (other states or countries)
 - If all of the above are not available... can consider establishing a state-specific health goal
-
- NC DHHS health goal established for GenX = 140 ppt
 - For drinking water

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Well Sampling Results near Chemours: Phases 1-3 (up to ~1.5 mi. from facility border)

GenX: NC health goal = 140 ppt

Red = > 420 ppt

Dark Orange = 140 - 420 ppt

Orange = 100 - 140 ppt

Yellow = 10 –100 ppt

Green = 0 - 10 ppt, detected

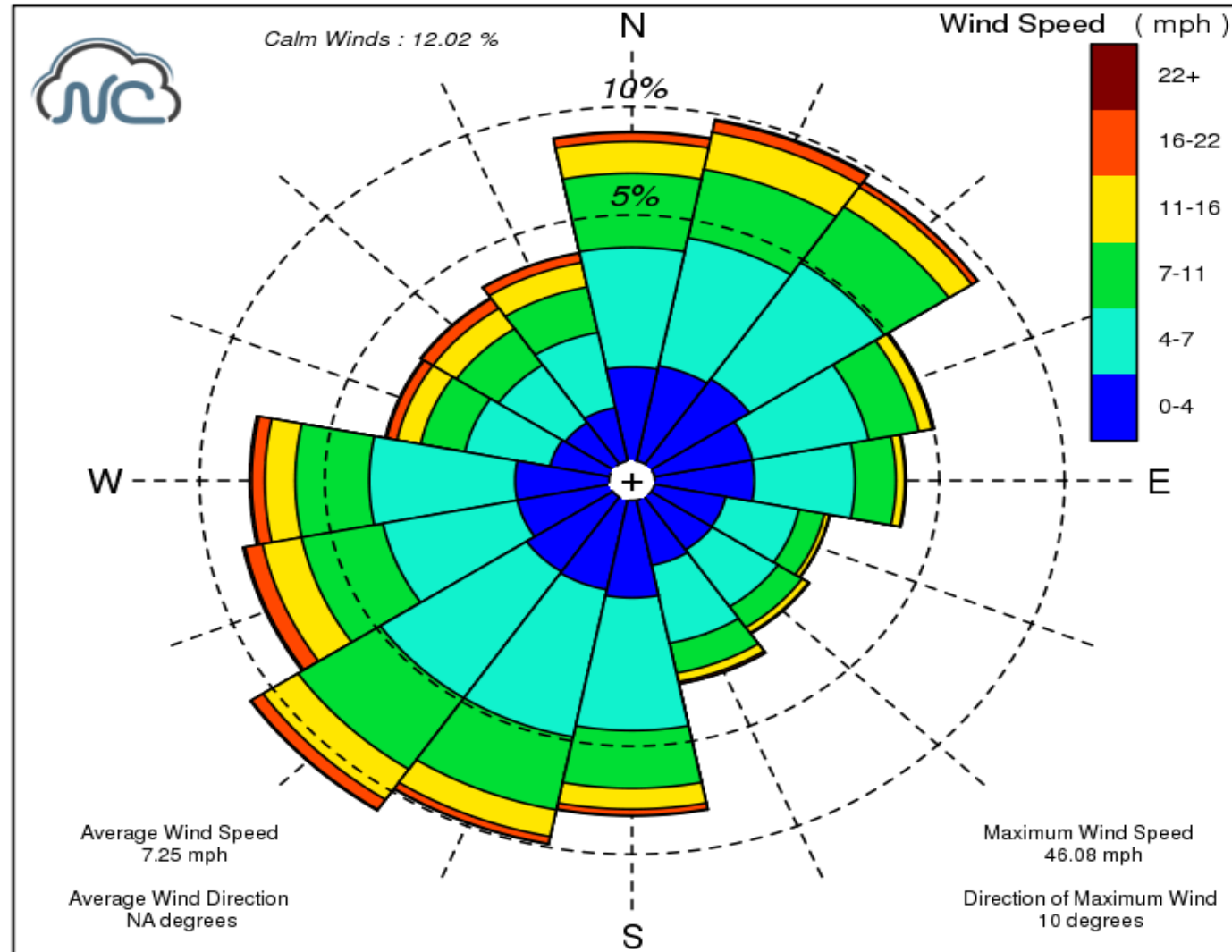
Blue = ND (Non Detect result)

No color = not tested



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Wind Rose for Fayetteville Airport (KFAY) Jan. 10, 1998 to Sep. 29, 2017



Angry, frustrated crowd of 350 demands GenX answers



Public outcry at GenX info session: 'Enough is enough'

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Need for information... now!

- **Lots of water data... no air data!**
 - **No GenX emissions measurements**
 - **DAQ requires stack testing**
 - **No GenX ambient air quality measurements**
 - **DAQ purchased temporary rain collection equipment in Spring 2018**
 - **DAQ purchased permanent rain collection equipment in Summer 2018**



Emerging Compounds

DAQ's investigation involving GenX and other PFAS from Chemours

- **GenX emissions data:**
 - Started with only estimates
 - DAQ required stack testing
 - Test method and protocol development
 - First of its kind measurements

Chemours 2016 emissions estimates as originally reported to DAQ	Chemours revised 2016 emissions estimates as of October 2017	Latest calculations, including January through April 2018 stack test measurements
66.6 lb/yr	594 lb/yr	2758 lb/yr

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Emerging Compounds

Air Emissions Testing or “Stack Testing” at Chemours

- >10 weeks of stack testing this year (so far)
- Sources, control systems, room air
- Focused primarily on C₃ Dimer Acid (GenX)



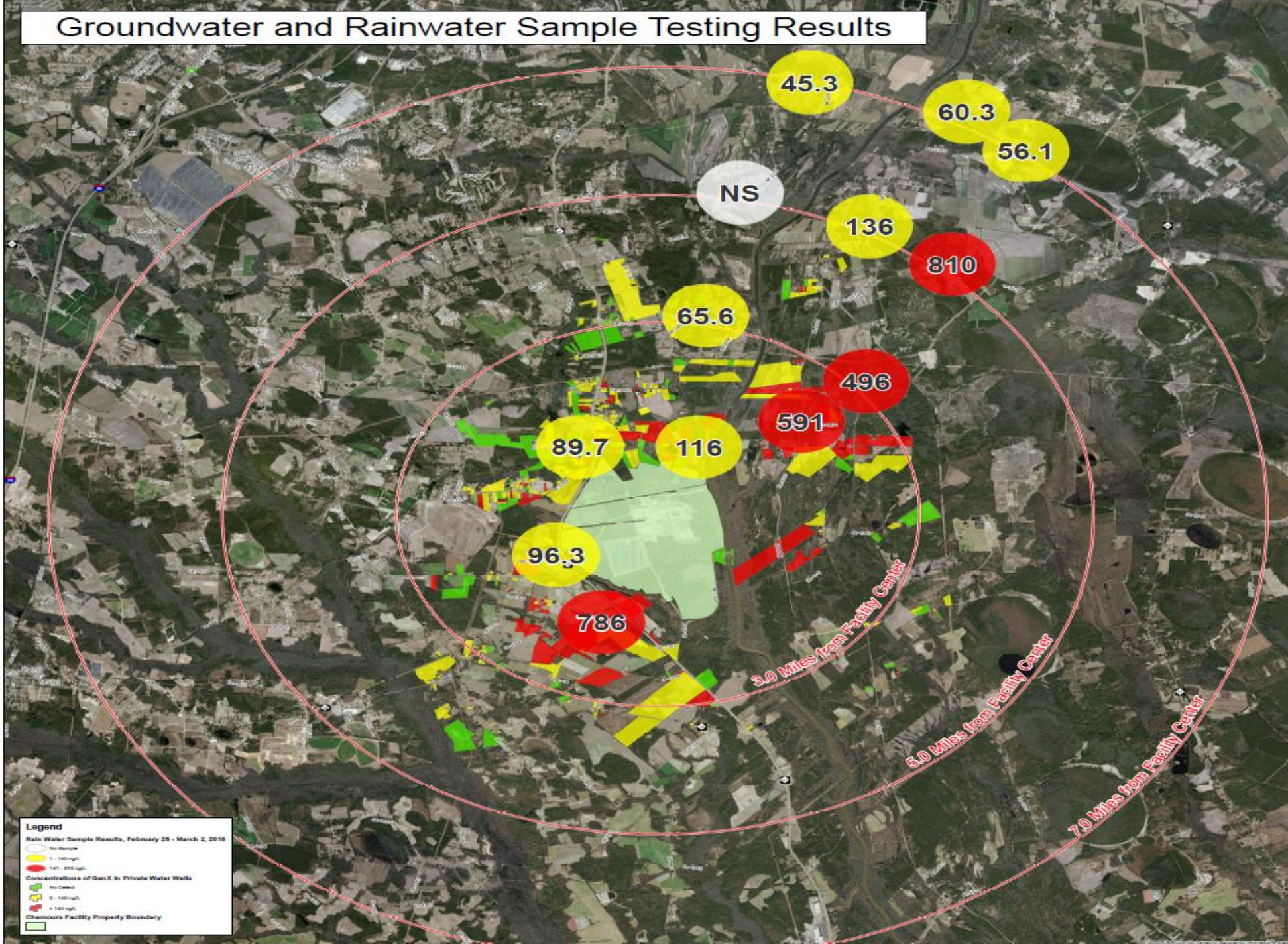
Emerging Compounds

DAQ's investigation involving GenX and other PFAS from Chemours

- **GenX ambient air quality data**
 - Methods?
 - Wet deposition data - first of its kind



Groundwater and Rainwater Sample Testing Results



Emerging Compounds

DAQ's Investigation Involving GenX and Other PFAS from Chemours

Summary of facts:

- The measured air emissions of GenX compounds are significantly higher than previously understood and reported.
- DAQ has measured GenX deposition through rainfall as far as 20 miles from the facility.
- The evidence of atmospheric deposition of GenX shows a geographic footprint that is similar to the detection of GenX in groundwater samples.



Emerging Compounds

GenX – Review of Actions

April 6, 2018:

- **60-day notice of intent to modify Chemours' air permit:**
 - **Requires demonstration that emissions of GenX compounds do not or will not cause or contribute to violations of state groundwater rules.**

The science and the data collected informed this action.



Emerging Compounds

GenX – Review of Actions

April 27, 2018:

- **Chemours response to 60 day notice**
- **Chemours has committed to:**
 - **Install a thermal oxidizer by 2020**
 - **Expected 99% reduction of GenX emissions facility-wide**



Emerging Compounds

GenX - Recent Actions

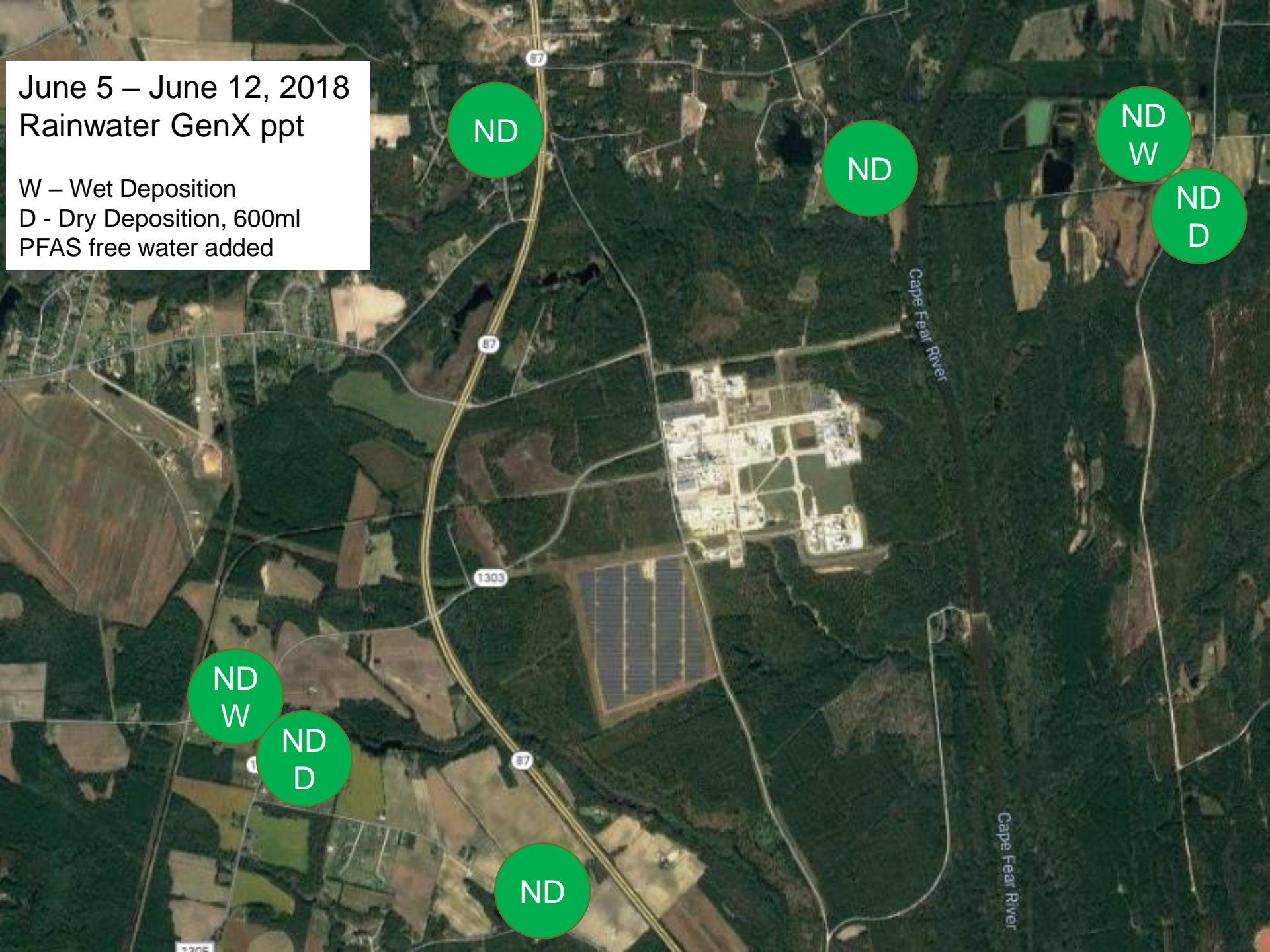
Carbon Adsorbers in Place – Late May 2018





June 5 – June 12, 2018
Rainwater GenX ppt

W – Wet Deposition
D - Dry Deposition, 600ml
PFAS free water added



Emerging Compounds

Looking Beyond GenX

Background PFAS monitoring

- **7 rainwater collection sites being established across NC**
 - **At or near our 7 DEQ regional offices**



Periodic Review of Air Quality Rules

North Carolina Rule Readoption Process

- Session Law 2013-413 (H74) and N.C.G.S. 150B-21.3A require state agencies to review and update rules every 10 years.
- DAQ first reviewed all existing rules to determine if any were unnecessary. With legislative approval, three sets of unnecessary rules (27 total rules) expired effective February 1, 2016.
- Remaining state air quality rules were divided into six groups to provide for more efficient and effective processing.
- December 31, 2020 - Deadline for readopting all 320 air quality rules.

North Carolina Rule Readoption Process

- Group 1 (General Air Quality Rules)
- Group 2 (Air Quality Permitting Rules)
- Group 3 (Air Toxics and Incinerator Rules)
- Group 4 (Open Burning, Fugitive Dust, and Odor Rules)
- Group 5 (Monitoring, Record Keeping, & Reporting, Source Testing, Risk Management Program, and Emission Reduction Banking Rules)
- Group 6 (General Emission Control Standards, VOC, and NOx Rules)

Tentative Rule H74 Readoption Schedule (Subject to Change)

Group	Rules	Stakeholder Meeting	Actual/Target Readoption Date
1	02D .0100, .0200, .0300, .0400, .1300, .2000, .2200	December 2, 2016	January 1, 2018 *except 02D .2203 (02/01/2018)
2	02Q .0100, .0200, .0300, .0400, .0500, .0800, .0900	March 6, 2017	April 1, 2018
3	02D .1100, .1200, 02Q .0700	June 5, 2017	July 1, 2018 *except 02D .1204 (03/01/2018)
4	02D .0540, .1800, .1900	February 13, 2018	Spring 2019
5	02D .0600, .2100, .2300, .2600	June 28, 2018	Spring/Summer 2019
6	02D .0500, .0900, .1000*, .1400, .1700*	Summer/Fall 2018	Summer/Fall 2019

* 02D .1000 & .1700 on separate rulemaking tracks. 02D .1000 effective July 1, 2018.
02D .1700 currently on hold.



North Carolina Rule Readoption Process

More information at: <http://deq.nc.gov/about/divisions/air-quality/air-quality-rules/periodic-review-existing-rules>



Air Monitoring

PROGRAM



Motor Vehicles

PROGRAM



Rules

PROGRAM



AQ Forecasts

PROGRAM



Planning

PROGRAM



Compliance

PROGRAM



Permitting

PROGRAM



Emission Inventories

PROGRAM

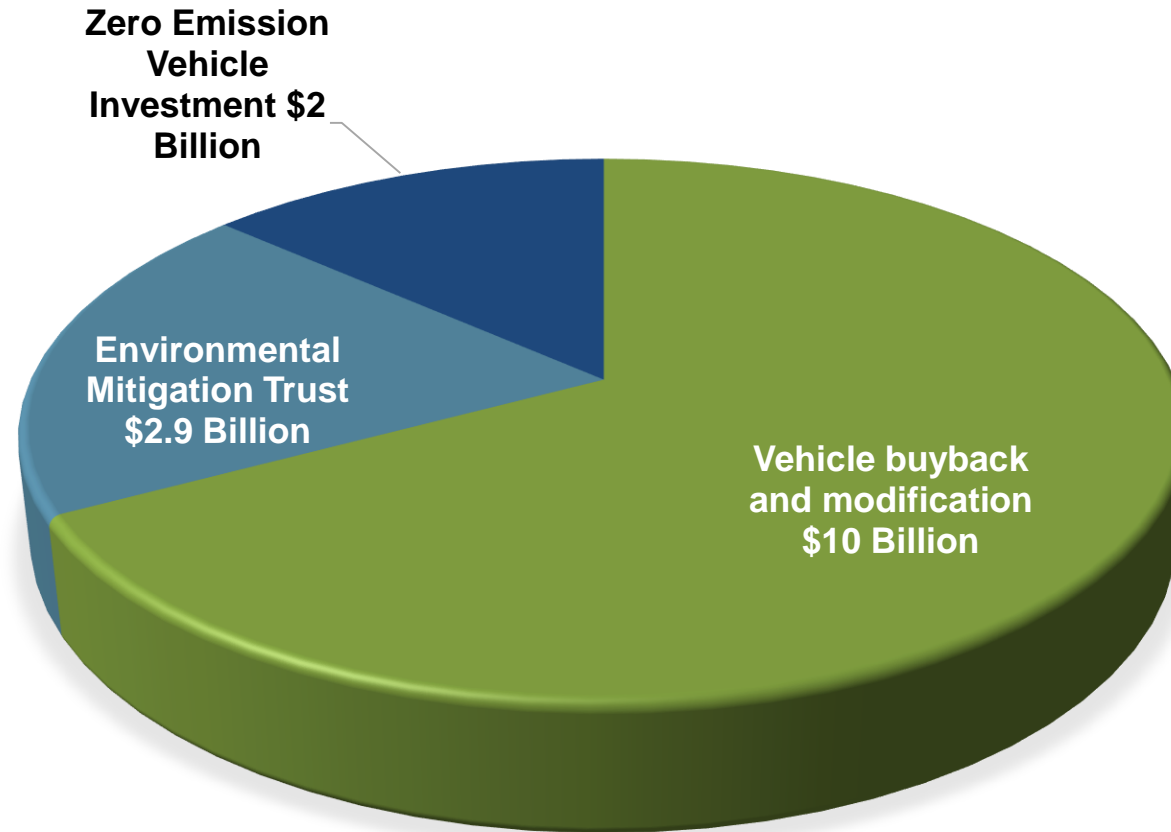
North Carolina's Volkswagen Settlement Agreement Mitigation Plan

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Volkswagen Settlement Summary

National Breakdown



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NC VW Mitigation Plan Phase 1 (2018 – 2020)

NC Grant Programs (2018-2020)	Eligible Action Category	Eligible Fuels	2018-2020 Funding (Phase 1)	
			Targeted Percent*	Targeted Funding Amount
School bus replacement program	School buses	Diesel – 25%	40%	\$12,272,754
		Natural Gas & Propane – 10%		
		All-electric - 5%		
Transit bus replacement program	Transit buses	All (diesel, propane, natural gas, electric)	20%	\$6,136,377
Clean heavy-duty on-road equipment program	Class Local Freight 4-8 trucks	All (diesel, propane, natural gas, electric)	10%	\$3,068,189
Clean heavy-duty off-road equipment program	Switcher locomotives, ferries, tugs, forklifts, port cargo handling equipment, ocean-going vessel shore power, airport ground support equipment Diesel Emission Reduction Act (DERA)	All (diesel, propane, natural gas, electric)	10%	\$3,068,189
ZEV infrastructure		Not Applicable	15%	\$4,602,283
Administrative costs		Not Applicable	5%	\$1,534,094
	Total:			\$30,681,886

*Percentage of available settlement funds targeted in these eligible categories for 2018 – 2020.

Next Steps for Volkswagen Settlement NC Mitigation Plan

- **Plan submitted to VW Settlement Trustee (August 22, 2018)**
- **Release request for proposals (Fall/Winter 2018-2019)**
- **Proposal evaluations (Winter/Spring 2018-2019)**
- **Phase 1 project awards (Summer 2019)**
- **Phase 2 planning (Fall 2019/Winter 2020)**

More VW Settlement Information

For additional information regarding the VW Settlement, please visit our webpage.

<https://deq.nc.gov/about/divisions/air-quality/motor-vehicles-and-air-quality/volkswagen-settlement>

or

ncair.org ...and click on Volkswagen Settlement

North Carolina Air Quality Update

Contact Information

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